ITS Projects in FY 2005

NTIA Projects

Audio Quality Research
Identify and contribute to selected open questions in the areas of digital speech and audio compression, transmission, and quality assessment. Investigate quality assessment and robust speech coding questions related to the deployment of VoIP systems. Deliverables include technical publications and presentations, algorithms, software, and laboratory demonstrations as requested.
Project Leader: Stephen D. Voran (303) 497-3839
e-mail svoran@its.bldrdoc.gov

Broadband Wireless Research
Continue development of state-of-the-art measurement systems for collecting broadband radio-wave propagation data. Provide measurement tools and propagation data used for simulation of the spectral efficiency of proposed communication systems. Deliverables include publications.
Project Leader: Peter B. Papazian (303) 497-5369
e-mail ppapazian@its.bldrdoc.gov

Broadband Wireless Standards
Develop technical means to improve predictions of signal coverage and interference for 3G wireless services through support to ITU-R, TIA TR-8 (Project 25), and other organizations. Building on previous ITS work, develop propagation model comparisons, apply the models to data sets, determine differences during comparison, document results, and start enhancement to ITM of effective antenna height. Deliverables include model enhancements, and standards contributions and leadership.
Project Leader: Paul M. McKenna (303) 497-3474
e-mail pmckenna@its.bldrdoc.gov

Electromagnetic Compatibility Research Support
Advance research in electromagnetic compatibility issues with the technical subcommittee of the Interdepartment Radio Advisory Committee; the US Working Party 8B of ITU-R; and the U.S. Administration in ITU-R Study Group 8 and ITU-R Working Party 8B. Provide technical inputs in the form of NTIA Reports; ITU Contributions; presentations at national and international meetings; and participation in national and international meetings.
Project Leader: Frank H. Sanders (303) 497-7600
e-mail fsanders@its.bldrdoc.gov

Interference Protection Criteria
Provide analysis and measurement results pertaining to the effects of selected types of interference into selected receiver types, and set the stage for additional work. Outputs include written documents that describe the results of interference measurements on radar receivers, and a method for moving forward with this work in subsequent years.
Project Leader: Frank H. Sanders (303) 497-7600
e-mail fsanders@its.bldrdoc.gov

RCG/JRG-1A/8B Website Support
Support the U.S. Administration in ITU-R activities by maintaining the U.S. website for the WP 8B Radar Correspondence Group and Joint Rapporteurs Group 1A/8B.
Project Leader: Jeanne M. Ratzloff (303) 497-3330
e-mail jratzloff@its.bldrdoc.gov

Network Interoperability
Derive and use a systems engineering-oriented framework to understand, and address, the integral components/elements of interoperability and their associated technical issues; analyze real world interoperability issues in the laboratory and use the results to ensure the utility of the framework. Deliverables include contributions to Project 25/ TR-8 meetings.
Project Leader: Jeffrey R. Bratcher (303) 497-4610
e-mail jbratcher@its.bldrdoc.gov

Network Performance
Provide objective, expert leadership and key technical contributions in ITU T and related U.S. industry committees responsible for developing broadband network performance, Quality of Service (QoS), Operation, Administration and Maintenance (OAM), and resource management standards.
Project Leader: Neal B. Seitz (303) 497-3106
e-mail nseitz@its.bldrdoc.gov

Networking Technology
Characterize and analyze the fundamental aspects of networks and network interoperability. Continue the development of networking technology methodologies and tools to address network management and network security/protection issues. Deliverables include a report, software, and a user manual.
Project Leader: David J. Atkinson (303) 497-5281
e-mail dj@its.bldrdoc.gov

Noise Analysis, Measurements, and Modeling
Perform initial work in the development of new knowledge and models for understanding noise in the radio spectrum, and set the stage for additional work. Outputs include documents describing current literature in this field, a set of proposed methods for moving forward with noise assessment measurements, and a set of example measurements of noise in selected radio environments.
Project Leader: Michael G. Cotton (303) 497-7346
e-mail mcotton@its.bldrdoc.gov

Spectrum Engineering Support
Study the factors related to replacing current federal single-agency LMR systems with a Federal shared radio system in the Washington, DC area. Perform measurements as needed to determine radio spectrum usage in the United States, to ensure compliance of new devices with existing regulations, and to resolve interference problems in cases where a Government radio system may be involved as a victim or interferer. Provide reports as appropriate.
Project Leader: Robert J. Matheson (303) 497-3293
e-mail rmatheson@its.bldrdoc.gov

Policy Support
Provide engineering and technical support to NTIA in telecommunications policy development. Provide support on various near-term issues, including broadband wireless access, 3rd generation wireless systems, privacy issues, information technology advances, and critical informal protection.
Project Leader: Alan W. Vincent (303) 497-3500
e-mail avincent@its.bldrdoc.gov

RSMS Enhancements
Develop and maintain software, hardware, systems, and equipment to meet the immediate needs of FY 2005 operations tasks. Implement enhancements to the current stepped measurement capabilities. Develop signal sinulation capabilities.
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

RSMS 4th Generation Development
Provide new and innovative measurement tools for current and future Radio Spectrum Measurement Science (RSMS) capabilities. Continue to develop and document the architectural design of the core software. Add additional instrument modules to the collection of Dynamic Link Libraries (DLLs).
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

RSMS Operations
Provide NTIA with critical measurement support to determine radio spectrum usage across the U.S.; resolve interference problems involving Government radio systems; and determine the emission characteristics of radio transmitter systems that may affect Government operations.
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

Table Mountain Modernization
Ensure a safe working environment at the Table Mountain field site, maintain and upgrade the site infrastructure, and provide support for research activities ongoing at ITS.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Table Mountain Research
Utilize the Table Mountain field site and radio quiet zone to support fundamental research into the nature, interaction, and evaluation of telecommunication devices, systems, and services. Actively solicit research proposals that will expand the institute's knowledge base, help identify emerging technologies, and develop new measurement methods to study the characteristics of new devices and systems.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Third Generation Wireless
Develop error models that accurately characterize the mobile radio link and estimate the effect of the radio channel on fundamental wireless network performance parameters, e.g., throughput, delay, and loss, to be used by both industry and Government. Deliverables include reports and presentations which disseminate the results of tasks to the public.
Project Leader: Robert J. Achatz (303) 497-3498
e-mail rachatz@its.bldrdoc.gov

Third Generation Wireless Interference Modeling and Characterization
Building on previous ITS work, develop interference models for viable PCS technologies, and verify and validate the models using software analysis and hardware measurements. Apply the models in characterizing PCS interference for 3G architectures, and determine practical means of mitigating observed interference effects. Deliverables include contributions to ATIS G3GRA and ITU-R TG-8/1.
Project Leader: Timothy J. Riley (303) 497-5735
e-mail triley@its.bldrdoc.gov

Video Quality Research
Develop technology for assessing the performance of digital video transmission systems. Extend previous work to low bandwidth reduced reference (RR) video quality measurements, including multimedia definition (MD) and high definition (HD) video systems. Actively transfer this technology to other Government agencies, end-users, standards bodies, and the U.S. telecommunications industry. Deliverables include technical publications, algorithms and software, and technical standards contributions.
Project Leader: Stephen Wolf (303) 497-3771
e-mail swolf@its.bldrdoc.gov

Other Agency Projects

Department of Commerce / National Institute of Standards and Technology

OLES Communication Standards
Provide engineering support, scientific analysis, technical liaison, and test design and implementation to allow the identification/development and validation of interoperability standards for the justice/public safety/homeland security community, and other communication system products and services supporting telecommunications and information technology needs. Provide technical assessments and evaluations of existing and emerging commercial products and services that may provide interim solutions for various interoperability scenarios. Deliverables include technical standards contributions, reports, economic impact statements, guidelines, handbooks, white papers, and other products as requested.
Project Leader: Val J. Pietrasiewicz (303) 497-5132
e-mail valp@its.bldrdoc.gov

Department of Commerce / National Oceanic and Atmospheric Administration / NOAA Weather Radio Program Office

NOAA Weather Radio System Performance Study
Determine the strengths and weaknesses of the National Weather Service's nationwide radio system, to form a basis for further deployment and enhancement. Provide data that characterizes present transmission capabilities, and a comprehensive analysis consisting of field measurements for each mode in the NWR trimode system (voice, alarm tone and SAME). Advise NWS of the performance metrics which can or should be used to evaluate each mode, and provide documentation of the specific measurement methods used.
Project Leader: Christopher J. Behm (303) 497-3640
e-mail cbehm@its.bldrdoc.gov

Department of Defense

Enhancements to Communication System Planning Tool (CSPT) for DOD
Enhance the ITS CSPT model by upgrading the tool to state-of-the-art GIS systems, and beginning the development of an indoor/indoor-outdoor propagation model.
Project Leader: Robert O. DeBolt (303) 497-5324
e-mail rdebolt@its.bldrdoc.gov

International Symposium on Advanced Radio Technologies (ISART)
Develop and conduct the symposium that addresses emerging, advanced wireless technologies that offer wide application and may affect how the radio spectrum is used. Gather information on these technologies and applications for the sponsor.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Department of Homeland Security / National Communications System

Network Reliability and Restoral
Reduce vulnerabilities and enhance restoral capabilities in public telecommunication networks by spearheading the development of network reliability, restoral, and emergency service standards in NRSSC (formerly T1A1.2). Apply computer simulation, reliability analysis, security analysis, and traffic engineering to assist NCS in assessing and optimizing public network reliability, identifying network disruptions, promoting security enhancements, and restoring services, in support of Critical Infrastructure Protection initiatives.
Project Leader: Arthur A. Webster (303) 497-3567
e-mail awebster@its.bldrdoc.gov

Packet Switched Networks
Facilitate the development of Recommendations defining Emergency Telecommunications Service capabilities in ITU-T Study Group 9. Apply computer simulation, laboratory studies, security analyses, and/or traffic engineering to assist NCS in support of PDD-63 and associated Critical Infrastructure Protection initiatives related to broadband cable television networks.
Project Leader: Arthur A. Webster (303) 497-3567
e-mail awebster@its.bldrdoc.gov

Federal Railroad Administration

Railroad Telecommunications Study
Continue technical support to the Federal Railroad Administration as it pertains to railroad telecommunications and the activities of the Association of American Railroads' (AAR) Wireless Communications Task Force (WCTF).
Project Leader: John M. Vanderau (303) 497-3506
e-mail jvanderau@its.bldrdoc.gov

Miscellaneous Federal and Non Federal Agencies

Telecommunications Analysis Services
Develop, maintain, and make available to other Government agencies and to the public, through user friendly computer programs, a large menu of engineering models, scientific and informative databases, and other useful communication tools.
Project Leader: Robert O. DeBolt (303) 497 5324
e-mail rdebolt@its.bldrdoc.gov

U.S. Coast Guard

USCG National Distress and Response System (NDRS) Modernization Project
Provide technical assistance and services to the U.S. Coast Guard as part of its project to modernize and upgrade the current National Distress and Response System (NDRS). Specifically, assist with the Developmental Testing and Evaluation phase of the project, by attending and monitoring the Formal Qualification Test (FQT) and System Integration Test (SIT).
Project Leader: Patricia M. Raush (303) 497-3568
e-mail praush@its.bldrdoc.gov

RTCMSC-117 Marine Radio Measurements
Test marine handheld radios according to a proposed voluntary standard that is under consideration by the Radio Technical Commission for Maritime Services. Determine whether the radios can maintain successful reception in the presence of high-level electromagnetic environments.
Project Leader: Brent L. Bedford (303) 497-5288
e-mail bbedford@its.bldrdoc.gov

Cooperative Research and Development Agreements (CRADAs)

(For more details of the Institute's FY 2005 CRADAs, see pp. 50-51)

Freescale, Inc.

Investigate the interference potential of various UWB waveforms. Generate a range of waveforms representative of existing and proposed UWB systems. Develop measurement procedures and analyses to characterize the interfering UWB signals. Assess UWB interference susceptibility of C-band television receivers. Deliverables include an NTIA Report.

Project Leader: Michael G. Cotton (303) 497-7346
e-mail mcotton@its.bldrdoc.gov

RF Metrics

Make use of the ITS Table Mountain facility to perform measurements of emissions from a manufacturer's new model of X-band radar using the procedures in ITU-R M.117. The emission measurements will include: the emission spectrum, pulse repetition rate, pulse width, and antenna pattern of the radar. The results of this measurement will be added to the ITS database of government and commercial radar emission measurements.

Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

State of Wyoming

In coordination with vendors, test the performance and interoperability of various Project 25 public safety radios in support of the State of Wyoming procurement of new public safety radio equipment.

Project Leader: John M. Vanderau (303) 497-3506
e-mail jvanderau@its.bldrdoc.gov

Scenes from field testing at the Table Mountain field site north of Boulder: ITS and OSM engineers prepare a set of laptop computers for measurements of the aggregate of their wireless emissions (top), and perform testing while taking shelter from the midday sun (middle). Meanwhile, a resident of the field site explores the inside of a vehicle (bottom) (photographs by F.H. Sanders).